

work for medical publications. He came to San Francisco in 1914 where, shortly after, he became connected with the book department of The Emporium, first as head of the medical book department and later as head of the entire book department. In 1923 he founded the business firm of J. W. Stacey, Inc., which soon attained importance as an institution in medical and scientific circles throughout Western America. Evidence of the high esteem in which Mr. Stacey's store is held is observed in the fact that medical students are urged by their instructors to browse through his stock of books to acquaint themselves with the most recent literature of their field.

Although Mr. Stacey was always a scientist at heart, with particular interests in systematic botany and ornithology, these fields of scientific endeavor did not attract him professionally. His success in the business world was due in no small degree to his deep attachment to science, for it was the rare combination of his thoroughly scientific background, his naturally keen business ability, and his happy and animated personality that accounted for a career that was eminently successful and in some respects unique.

California Academy of Sciences,
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DERMATITIS AND PHOTSENSITIZATION PRODUCED BY PTELEA ANGUSTIFOLIA

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In the summer of 1942 and again in 1943 workmen in Highland Park, Rochester, New York, received a severe dermatitis believed to have been caused by contact with the leaves of *Ptelea angustifolia* Benth. (*P. lutescens* Greene), a member of the Rutaceae. Other plants in this family, *Dictamnus albus* L. and *Ruta graveolens* L. are known to cause a dermatitis in susceptible individuals but no records could be found of dermatitis caused by any species of *Ptelea*. This note is a report of some tests made by us which demonstrate that *Ptelea angustifolia*, a native shrub of the Southwestern United States, also may cause a severe dermatitis in some individuals.

The fresh material used in these tests was kindly supplied by Mr. R. H. Horsey, from introduced shrubs growing in Highland Park. We are indebted to Dr. Joseph N. Frost of Ithaca for his interest in the tests, for advice, and for the treatment of some of the more severe cases of dermatitis in two of the subjects.

Eight persons, all volunteers, were used as subjects in the

tests: subjects 1 and 3, adult white females; subjects 2, 4, 7 and 8, adult white males; subjects 5 and 6, adult oriental males.

EXPERIMENTS WITH *PTELEA ANGUSTIFOLIA*

The tests are recorded under time of exposure, subjects used, method of application and reactions or results obtained with each subject.

EXPOSURE 1. August 4, 9 A.M. Subjects 1 and 2.

Crushed leaves were rubbed, on an area 2 cm. in diameter, above the elbow of the left arm. Direct sunlight was excluded.

Subject 1. A slight reddening of the skin appeared over an area 3 by 4 cm. in diameter four days later. The color remained the same for four days and then began to fade. The spot was still visible on the tenth day when a slight itching was perceived.

Subject 2. No reaction.

EXPOSURE 2. August 4, 9 A.M. Subjects 1 and 2.

Crushed immature fruits were rubbed over an area 2 cm. in diameter below the left elbow. Direct sunlight was excluded.

No reaction occurred in either subject.

EXPOSURE 3. August 7, 1 P.M. Subjects 1, 2 and 3.

Crushed leaves were vigorously rubbed, on an area 3 cm. in diameter, far above the elbow on the left arm of subjects 1, 2 and 3, and also on the right upper arm of subject 1 and on the center of the upper back of subject 2. The areas were subsequently exposed to direct sunlight for one hour. A severe dermatitis developed in subjects 1 and 2 and a moderate dermatitis developed in subject 3. The development and history of the dermatitis on subjects 1 and 2 are recorded below; the hours or days indicate total time elapsed since the original exposure to contact with the leaves.

Subject 1. Right arm.

18 hrs. A small faintly red area was discernible.

30 hrs. A red area, 5 by 7 cm., was definitely outlined; it burned much as a sunburned skin.

40 hrs. The inflamed area, now 7 by 7 cm., was very sensitive and pained when touched.

48 hrs. Frank vesiculation appeared and edema began to develop.

52 hrs. Smaller blisters became confluent; one large blister had increased to 2 cm. in diameter.

54 hrs. Blisters were cut open, drained of yellow fluid and covered with dressing and kept moist with dilute boric acid for the following four days. After the fifth day the inflammation began to subside and considerable itching was experienced. The maxi-

mum size of the blistered area, 6 by 8 cm., was reached on the sixth day. The blistered area developed new skin within a few days but it remained reddish-brown for two months.

The exposure on the left arm developed into a similarly severe dermatitis on an area 5 by 13 cm. within thirty hours. Its general course ran almost identical with that described for the right arm. The same treatment was applied.

Subject 2. Left arm.

- 18 hrs. A reddish spot 6 by 6 cm. was discernible.
- 30 hrs. Inflamed area red, 7 by 10 cm., with small whitish vesicle near the center.
- 40 hrs. Inflamed area 7 by 12 cm., with vesiculation especially near the center.
- 52 hrs. Frank vesiculation but some blisters becoming confluent, some 2 cm. in diameter and at least 1 cm. high, edematous; several had ruptured and were discharging a yellow fluid.
- 54 hrs. Blisters were cut open, drained and covered with dressings and kept moist with dilute boric acid solution for the following four days. After the fifth day the inflammation began to subside but considerable itching was experienced from then on for ten days. Even six weeks after exposure itching was severe whenever the subject perspired or became over-heated. The affected area was still reddish-brown after two months. The exposure on the back ran a course very similar to that on the arm except that the area was larger, 8 by 10 cm., with two radial streaks 2 by 6 cm. long extending toward the neck.

Subject 3. Left arm.

A reddish spot 6 by 8 cm. appeared within eighteen hours. It became more inflamed and small blisters developed within three days. The general appearance of the dermatitis was similar to that in subject 1 but much less severe. The affected area remained dark reddish brown for two months and then began to fade gradually but it was still visible fifteen weeks after the beginning.

EXPOSURE 4. August 9, 7 A.M. Subjects 1 and 2.

Crushed leaves were rubbed on an area 3 cm. in diameter on the inner side above the elbow of both arms (subject 1) and on the right arm (subject 2). Direct sunlight was excluded.

No reactions were observed in either subject.

EXPOSURE 5. August 14, 2 P.M. Subjects 1, 2 and 3.

Crushed leaves were rubbed lightly, on areas 1 cm. square, on the inner side of the right arm both above and below the elbow.

Direct sunlight was excluded.

No reactions were observed in any subject.

EXPOSURE 6. August 9, 2 P.M. Subjects 4, 5, 6, 7 and 8.

A small piece of crushed leaf was rubbed on an area approximately 2 cm. in diameter above and below the elbow of the left arm of each subject. The arm was not exposed to direct sunlight. Subject 4 developed a slight reddening of the skin of both areas of exposure four days later. Subjects 5, 6, 7 and 8 showed no reactions.

EXPERIMENT WITH DICTAMNUS ALBUS

August 7. Subjects 1, 2 and 3.

Crushed leaves were rubbed on an area 2 cm. in diameter on the right upper arm. The treated areas were exposed to diffuse sunlight for one hour.

No reaction developed in subjects 1 and 3. A severe dermatitis developed in subject 2. Within eighteen hours a red inflamed area, 5 cm. in diameter, had developed. It increased to 6 by 7 cm. and blisters developed. The general course of the development of the dermatitis and its response to the boric-acid solution treatment were very similar to that of *Ptelea angustifolia*.

EXPERIMENT WITH RUTA GRAVEOLENS

August 7. Subjects 1, 2 and 3.

Crushed leaves were rubbed on areas 2 cm. in diameter on the outside of the lower right arm of subjects 1 and 3, and on the extreme upper right arm of subject 2. The treated areas were exposed to direct sunlight for one hour.

A slight reaction was obtained in subjects 1 and 3. After thirty hours a definite reddening and inflammation of the skin was discernible over an area 5 by 7 cm. in subject 1 and on an area 7 by 12 cm. in subject 3. This was followed by more severe inflammation and itching but no vesiculation.

Subject 2 developed a severe dermatitis. Within eighteen hours after contact a red inflamed area 8 cm. in diameter was evident. After thirty hours the spot had increased to 10 by 11 cm. with frank vesiculation. The blisters soon became confluent and from then on the general appearance of the dermatitis and its response to treatment with boric-acid solution were identical to that caused by *Ptelea angustifolia*.

Of the eight subjects tested, three were highly susceptible to contact with the leaves of *Ptelea angustifolia*, one was slightly susceptible and four showed no reaction under the conditions of the tests. Subjects 1 and 2 developed only a slight reaction if not exposed to direct sunlight after contact with the leaves but developed a severe dermatitis if exposed to direct sunlight for one hour after contact. Of the five subjects who were tested without

subjecting them to direct sunlight after contact, only one showed a slight reaction.

The three subjects who were highly susceptible to *Ptelea angustifolia* were also tested for susceptibility to *Dictamnus albus* (gas plant) and *Ruta graveolens* (rue). Subject 2 was highly susceptible to all three species. Subjects 1 and 3 showed no reaction to *Dictamnus albus* and a slight reaction to *Ruta graveolens*.

SUMMARY

Contact with the leaves of *Ptelea angustifolia* causes a dermatitis in susceptible individuals. Exposure to direct sunlight subsequent to contact increases the severity of the dermatitis. This suggests that *Ptelea angustifolia* has a photosensitizing action. The dermatitis caused by *Ptelea angustifolia* is very similar to that produced by *Dictamnus albus* and *Ruta graveolens*. In the experimentally produced dermatitis the first inflammation appeared eighteen to thirty hours after contact with the leaves. The severe cases continued for about ten days.

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ON THE SHOOT APEX OF CHLOROGALUM POMERIDIANUM (DC.) KUNTH¹

CLARENCE STERLING

Recent investigations on the structure of apical meristems have rekindled interest in the cyto-histology of the shoot apex as contrasted to the more static formulation of cell-wall patterns. (See reviews by Foster, 5; 6.) One of the main services of these studies has been to show the essential lability inherent in plant tissues and the consequent inadmissibility of posing strict categories and formulae within which plant life is to function.

Probably one of the most rigid "laws" imposed on the angiosperm shoot apex is that it have at least one stratum of cells which experiences anticlinal divisions exclusively, this cell layer being called variously a "dermatogen" or "tunica." Very few exceptions to this basic rule have been noted. Magnus (7) indicated divisions in the dermatogen of the tip of the lateral pistillate inflorescence of *Secale cereale*; Pottier figured such a pericline at the tip of a branchlet of *Ruppia maritima* (8, fig. 77) and in the apical meristem of the shoot of *Cymodocea nodosa* (8, fig. 197); and more recently Sharman (11, 12) found periclinal lines at the summits of the

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